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PUBLIC HEALTH
EPIDEMIOLOGY & ASSESSMENT

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West Nile Virus Detected in Southern California

West Nile Virus (WNV) has been detected in mosquitoes in Imperial County. It is possible that Orange County could have human cases at any time. While we appear to be having an epidemic year of enteroviral meningitis (primarily due to echovirus 30), it is important to keep in mind the possibility of WNV as a cause of meningitis, as well as encephalitis and movement disorders. Meningitis and encephalitis of suspected infectious cause are reportable conditions under California law. Cases should be reported promptly to Orange County Epidemiology at (714) 834-8180. It is important to identify WNV as a cause of human illness so that preventive actions can be taken. Also, establishing the diagnosis will avoid potentially harmful treatment for other possible diagnoses (e.g., heparin or intravenous immunoglobulin (IVIG)).

Clinical—WNV infection can be asymptomatic, or it can cause a variety of signs and symptoms from a mild febrile illness to meningitis, encephalitis and acute flaccid paralysis. It is estimated that approximately 20% of persons infected with WNV have a febrile illness, while 1 in 150 develop severe neurological disease. Neurological presentations have included ataxia and extrapyramidal signs, cranial nerve abnormalities, myelitis, optic neuritis, polyradiculitis, and seizures. Some patients also develop a maculopapular or morbilliform rash. The most significant risk factor for severe neurological disease is advanced age. Many patients have a prolonged convalescence or are left with permanent sequelae.

In 2002 for the first time transmission was shown to have occurred by transplantation, transfusion, vertically (mother to fetus), through breastfeeding and occupationally. All blood donations are being screened for WNV with investigational nucleic acid tests.

Laboratory—IgM antibody to WNV appears in CSF as early as the first few days of illness. Paired acute (0-8 days after onset) and convalescent (14-21 days after the acute specimen) serum specimens are used to demonstrate seroconversion. A negative IgM on acute phase serum does not rule out WNV infection. IgM antibody can persist in serum for 12 months or longer and is, therefore, not necessarily diagnostic of acute infection. For these reasons, CSF IgM and acute and convalescent phase serum for IgG antibody are most useful for diagnosing WNV infection. Because of cross-reactions with other flaviviruses, confirmation by a neutralization assay is necessary to confirm the diagnosis. Polymerase chain reaction (PCR) tests of CSF are not sensitive enough to be relied upon for diagnosis because viremia occurs prior to onset of symptoms. Orange County Epidemiology may be able to assist with testing and confirmation—call (714) 834-8180.

Control measures—The most effective means for limiting the risk of WNV infection is through elimination of mosquito breeding sites, including even small amounts of standing water. Additional preventive measures include avoiding outdoor activity at the time when mosquitoes are most active (dawn and dusk), using mosquito repellent, and assuring that window and door screens are in good condition.

Additional information
Centers for Disease Control & Prevention (CDC): http://www.cdc.gov/ncidod/dvbid/westnile/index.htm

Medline WNV information: http://www.nlm.nih.gov/medlineplus/westnilevirus.html

California Department of Health Services: http://westnile.ca.gov